

Trend Study 16C-42-04

Study site name: Box Canyon Sage Grouse.

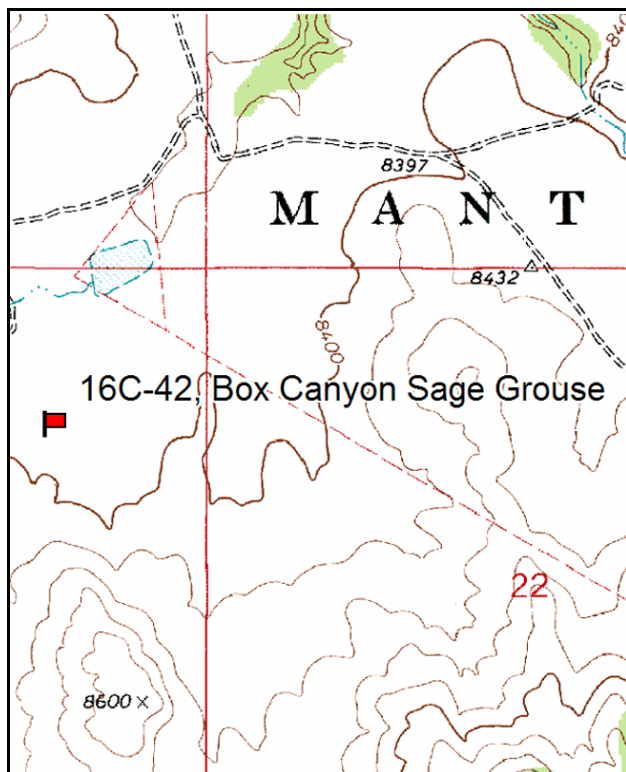
Vegetation type: Mountain Big Sagebrush.

Compass bearing: frequency baseline 185 degrees magnetic.

Frequency belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

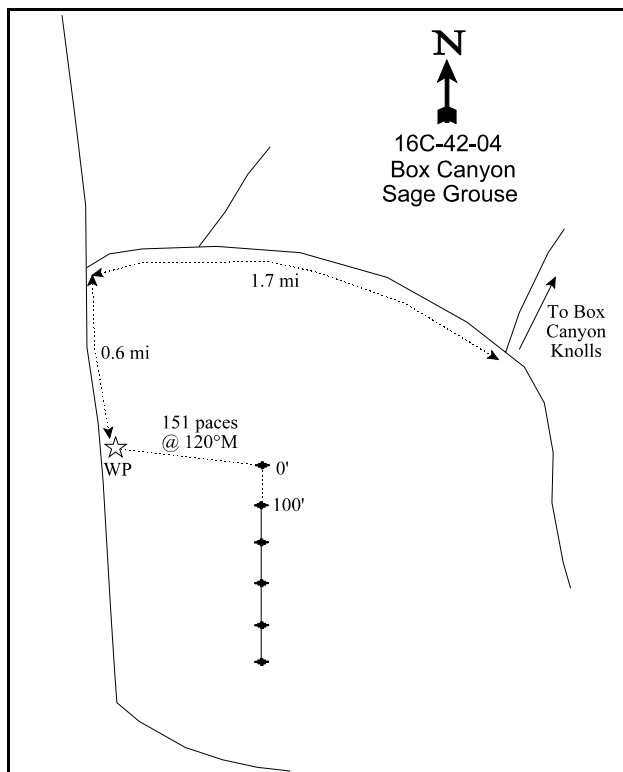
LOCATION DESCRIPTION

From Center Street in the town of Emery, continue south on Highway 10 for 1.2 miles. Turn right onto a dirt road and go 0.6 miles. Turn left and travel up Link Canyon 7 miles (4WD road) to the top. Stay left at the fork. Continue west for 1.7 miles to another fork. Turn left and head south for 0.6 miles to a witness post on the left hand side of the road. The 0-foot post is 151 paces from the witness post at 120°M and is marked with a blue browse tag, #49.



Map Name: Emery West

Township 21S, Range 5E, Section 21



Diagrammatic Sketch

GPS: NAD 27, UTM 12S 4314265 N, 469012 E

DISCUSSION

Box Canyon Sage Grouse - Trend Study No. 16C-42

The Box Canyon Sage Grouse site was established in 2004 to monitor sage grouse nesting and brooding habitat. There is an active lek just south of this site. The nearby Wildcat Knolls study site samples elk, but no sage grouse. The site has a slope of about 5% with a north aspect. Elevation is approximately 8,400 feet. It samples a mountain big sagebrush community that sits in a large basin. This area is part of the Emery grazing allotment. Pellet group data for 2004 estimate 29 elk, 5 deer, 28 cow days use /acre, and 131 sage grouse pellet groups/acre (73 edu/ha, 12 ddu/ha, 70 cdu/ha, and 322 sgp/ha). Deer and elk use is mostly from winter use, a few from spring. Cow pats were from last season, but cows could be seen a quarter mile away. Sage grouse pellets were from winter and early spring.

The soil is moderately deep and appears well developed. Effective rooting depth is moderate at 15 inches. A slight compacted clay layer was encountered about 6 inches down in the profile. It does not appear to be continuous or a rooting barrier. Soil texture is a sandy clay loam with a neutral pH (6.8). There is very little rock in the soil profile or on the surface. Stoniness measurements are more a reflection of soil compaction since no rock was hit. The ground is covered with a high percent of litter and vegetation with little bare soil exposed. The erosion condition class determined soil movement as stable in 2004.

Mountain big sagebrush is the key browse species on this site. Density of mountain big sagebrush was estimated at 3,580 plants/acre. Mostly a mature population, a few seedlings and young plants were found, but overall reproduction was low. Utilization was light to moderate and vigor was good. Percent decadence was estimated at 23% and only 13% of the total population appear to be dying. Density of low rabbitbrush is scattered and in low numbers.

The herbaceous understory is dominated by perennial grasses creating a fairly dense ground cover between the sagebrush. Perennial grasses account for 49% of total cover on this site. Smooth brome is the dominant grass and contributes 56% of the grass cover. Mutton bluegrass and sedge species are also common in the understory. Forbs are very diverse, but contribute little (4%) to ground cover. However, several species that are important to sage grouse are located on this site, such as common dandelion, hawksbeard, penstemon, lupine, and two milkvetch species (Beck and Mitchell 1997).

2004 APPARENT TREND ASSESSMENT

Soil shows little sign of erosion due to extensive ground cover and appears to be stable. There is good protective cover in the understory and bare ground is relatively low. Key browse species, mountain big sagebrush, appears stable. Use is light to moderate and vigor is good. Recruitment is low, while percent decadence is 23%. This may be a potential problem in the future with continued drought. Understory vegetation has good ground cover, which is dominated by smooth brome. Forbs are limited in the understory, but are very diverse. The abundance of smooth brome (which is shade tolerant and a sod-former) can outcompete the forbs and further reduce their abundance. The Desirable Components Index (see methods) rated this site as good with a score of 76 due to excellent shrub cover, several young shrubs, high decadence, and excellent grass and forb cover.

winter range condition (DC Index) - 76 (good) Mountain big sagebrush type

HERBACEOUS TRENDS --

Management unit 16C, Study no: 42

T y p e	Species	Nested Frequency	Average Cover %
		'04	'04
G	Agropyron cristatum	47	1.00
G	Agropyron spicatum	7	.07
G	Bromus anomalus	3	.03
G	Bromus inermis	333	12.10
G	Carex spp.	160	2.19
G	Festuca ovina	50	.77
G	Poa fendleriana	147	4.22
G	Sitanion hystrix	8	.05
G	Stipa lettermani	37	.87
Total for Annual Grasses		0	0
Total for Perennial Grasses		792	21.32
Total for Grasses		792	21.32
F	Antennaria rosea	58	.74
F	Androsace septentrionalis (a)	4	.04
F	Arabis spp.	6	.02
F	Astragalus convallarius	25	.20
F	Astragalus spp.	7	.07
F	Castilleja linariaefolia	4	.04
F	Chaenactis douglasii	6	.06
F	Chenopodium spp. (a)	7	.01
F	Comandra pallida	6	.04
F	Crepis acuminata	4	.03
F	Erigeron eatonii	17	.07
F	Erigeron pumilus	10	.04
F	Eriogonum racemosum	61	.52
F	Eriogonum umbellatum	14	.16
F	Hedysarum boreale	3	.06
F	Lupinus argenteus	12	.37
F	Lychnis drummondii	21	.14
F	Machaeranthera canescens	2	.03
F	Oenothera pallida	11	.02
F	Orthocarpus luteus (a)	16	.12
F	Penstemon comarrhenus	12	.11
F	Penstemon watsonii	12	.25
F	Polygonum douglasii (a)	33	.06

T y p e	Species	Nested Frequency '04	Average Cover % '04
F	Potentilla spp.	48	.81
F	Senecio multilobatus	5	.04
F	Taraxacum officinale	17	.10
Total for Annual Forbs		60	0.24
Total for Perennial Forbs		361	3.97
Total for Forbs		421	4.21

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --

Management unit 16C, Study no: 42

T y p e	Species	Strip Frequency '04	Average Cover % '04
B	Artemisia nova	5	1.06
B	Artemisia tridentata vaseyana	80	15.85
B	Chrysothamnus nauseosus	7	.21
B	Chrysothamnus viscidiflorus viscidiflorus	24	.81
B	Symphoricarpos oreophilus	2	.03
B	Tetradymia canescens	1	.03
Total for Browse		119	18.00

CANOPY COVER, LINE INTERCEPT --

Management unit 16C, Study no: 42

Species	Percent Cover '04
Artemisia nova	.65
Artemisia tridentata vaseyana	15.98
Chrysothamnus nauseosus	.35
Chrysothamnus viscidiflorus viscidiflorus	.18

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 16C, Study no: 42

Species	Average leader growth (in)
	'04
Artemisia tridentata vaseyana	1.9

BASIC COVER --

Management unit 16C, Study no: 42

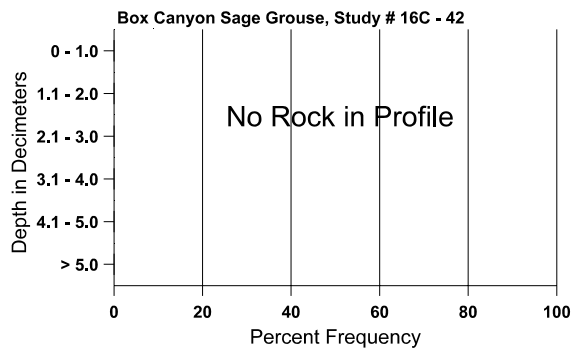
Cover Type	Average Cover %
	'04
Vegetation	45.07
Pavement	.01
Litter	55.27
Cryptogams	.23
Bare Ground	22.39

SOIL ANALYSIS DATA --

Management unit 16C, Study no: 42, Study Name: Box Canyon Sage Grouse

Effective rooting depth (in)	Temp °F (depth)	pH	% sand	% silt	% clay	%0M	PPM P	PPM K	ds/m
14.5	48.3 (16.7)	6.8	55.4	18.8	25.8	3.1	21.0	304.0	1.0

Stoniness Index



PELLET GROUP DATA --

Management unit 16C, Study no: 42

Type	Quadrat Frequency	Days use per acre (ha)
	'04	'04
Rabbit	6	-
Grouse	4	-
Elk	11	29 (73)
Deer	8	5 (12)
Cattle	8	28 (70)

BROWSE CHARACTERISTICS --

Management unit 16C, Study no: 42

		Age class distribution (plants per acre)					Utilization					
Y	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
Artemisia nova												
04	420	80	100	200	120	100	0	0	29	14	14	15/20
Artemisia tridentata vaseyana												
04	3580	280	340	2420	820	840	9	.55	23	13	15	30/40
Chrysothamnus nauseosus												
04	220	-	20	200	-	-	0	0	-	-	0	16/18
Chrysothamnus viscidiflorus viscidiflorus												
04	1180	180	60	1120	-	20	5	0	-	41	0	9/14
Symphoricarpos oreophilus												
04	40	-	40	-	-	-	0	0	-	-	0	5/6
Tetradymia canescens												
04	20	-	20	-	-	-	0	0	-	-	0	7/7